

# DEPARTMENT OF THE NAVY

BOARD OF INSPECTION AND SURVEY  
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INSURVINST 4730.22C  
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22 Jan 02

## BOARD OF INSPECTION AND SURVEY INSTRUCTION 4730.22C

From: President, Board of Inspection and Survey

Subj: STANDARDS FOR SURFACE SHIP UNDERSEA WARFARE (USW)  
DEMONSTRATION

Ref: (a) INSURVINST 4730.24

Encl: (1) Sample Demonstration Plan

1. Purpose. To establish policy and standards for demonstrating the condition of USW sensors, underwater fire control, weapon systems, and USW countermeasures for applicable surface ships during INSURV Final Contract Trials (FCTs) and Material Inspections (MIs). Demonstration of Aircraft Carrier Tactical Support Centers (CV-TSC) is addressed in reference (a).

2. Cancellation. INSURVINST 4730.22B.

3. Discussion. The USW demonstration is a non-tactical exercise of USW capabilities utilizing a MK 39 Expendable Mobile ASW Training Target (EMATT). Evaluated events include:

- a. Acquisition by all USW sensors.
- b. Acoustic data processing to a fire control solution.
- c. Simulated engagement.
- d. Operation of USW countermeasures.

4. Policy.

a. The USW demonstration will be conducted during Acceptance Trials (ATs), FCTs, and MIs on all surface ships with an USW primary mission area. The USW demonstration conducted during ATs is governed by local shipyard test procedures.

b. The demonstration will be an USW operational period to include detection, localization, tracking, and simulated engagement of a target.

The following equipment, if applicable, will be demonstrated:

- (1) Active (hull-mounted) sonar.
- (2) Passive (hull-mounted) sonar.
- (3) Passive towed array.
- (4) Sonobuoy processing via ship's antenna and receiver.
- (5) Sonobuoy processing via helicopter data link.
- (6) SVTT (UWFCS initiated air slug) and/or VLA  
(launch simulated).
- (7) NIXIE.
- (8) Prairie/Masker Air Systems.

d. If helicopter services are not available, the LAMPS MK III radio telemetric data set AN/SRQ-4 will be demonstrated using the TS-4120/SRQ-4 test set.

#### 5. Preparations.

a. The ship should be positioned in an area of at least four by four nautical miles, with minimal shipping present. All passive and active systems will be utilized.

b. The ship should have available and be ready to launch an expendable bathythermograph (XBT), EMATT, sonobuoys, and a long-life smoke float (MK6 or MK58). The sonobuoys will be used for testing on board processing equipment and will be received via helicopter, if available, and by direct link through shipboard antennas to onboard receiving equipment. The smoke float is used to establish the DATUM visual bearing while maneuvering the ship. It is assumed the distance traveled by the target during this demonstration will be small and the location of the smoke float will be near the target's location.

c. All USW weapon systems, sonars, towed array, countermeasures, and helicopter USW support systems installed should be fully operational and in NORMAL (not CASUALTY) modes. Equipment should meet major PMS specifications outlined in the ship's installed PMS deck and/or Combat System Demonstration Test Package. Ensure the towed array is ready for deployment. Critical installed monitoring and support systems (DRT/NC-2/DDRT plotting tables, 400Hz power, dry air, HP air and cooling water)

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must be operational to the extent that all mission areas are supported.

6. Procedures.

a. The following sequence, depicted in enclosure (1), is the recommended method for conducting the USW demonstration.

(1) Select an EMATT run pattern from the data sheet enclosed in the EMATT package and note the initial magnetic course (recommend selecting the shallow depth pattern).

(2) Conduct an XBT drop to determine the best depth setting for sonobuoys and towed array.

(3) Deploy the towed array, if applicable.

(4) Maneuver the ship down the reciprocal of the intended EMATT magnetic course and drop sonobuoys based on the computed Maximum Detection Range (MDR).

(5) Deploy the EMATT and smoke float approximately one MDR beyond the last sonobuoy.

(6) Confirm, by sonobuoy or towed array, that EMATT is operational.

(7) Establish secure data link with helicopter, if applicable. However, do not delay the demonstration if data link cannot be established at aircraft check-in.

(8) Maneuver the ship 180 degrees to port or starboard of the EMATT magnetic course and begin prosecution.

(9) All sensors should detect, localize, track, and classify the EMATT.

(10) Pass contact information from each sensor to the plotting team. Information should also be passed electronically, including acoustic lines of bearing, to the appropriate watchstations in CIC.

(11) Conduct simulated attack(s) utilizing all USW weapon systems.

(12) Upon completion of the detect-to-engage portion of the demonstration, operation of NIXIE (all towed bodies) and Prairie/Masker air systems should be demonstrated.

**NOTE:** Helicopter deployment of sonobuoys, smoke float, and EMATT is optional.

Briefing. The demonstration should be pre-briefed during the Combat Systems brief early on the first day of the inspection. The ship's demonstration plan should be reviewed by the INSURV USW inspector to ensure all equipment is demonstrated. If there are any procedural questions, the USW inspector should be contacted for assistance.

8. Evaluation Criteria. The USW demonstration will be evaluated using the following criteria:

a. Satisfactory. Contact was gained and displayed on all sensors and processors, contact data was automatically transmitted to the fire control systems, and all weapons systems demonstrated the ability to remotely engage (simulated) the target. USW countermeasures (NIXIE and Prairie/Masker Air systems) were fully functioning in all modes.

b. Degraded. The contact was gained by at least one sensor and successfully engaged with at least one weapons system. However, not all USW sensors, processors or weapons systems demonstrated the ability to track/remotely engage the target. If significant equipment in the ship USW suite directly associated with acquisition, developing a fire control solution or engaging (firing remotely and locally) a contact is not operational or malfunctions, the demonstration is degraded. USW countermeasures (NIXIE and Prairie/Masker Air systems) inoperative in one or more modes may degrade the demonstration.

c. Unsatisfactory. The target was not successfully engaged by any USW weapons system.

9. Responsibility. As with all ship's operations, the Commanding Officer retains responsibility for the safe conduct of this demonstration and for ensuring all applicable safety precautions are enforced. Nothing is more important than the safety of all personnel and equipment.

/s/

W. R. SCHMIDT

Distribution:

CNO (N84,N86), CINCLANTFLT (N3), CINCPACFLT (N3),  
COMNAVSEASYSOM (SEA 03, 07, 09), PEO TSC (PMS 400F),  
PEO UNSEAWAR (PMS-411), COMNAVSURFPAC (N65), CO INSURVLANT, CO INSURVPAC

# SAMPLE DEMONSTRATION PLAN

INSURVINST 4730.22C

## ASW/USW OPDEMO

**SCENARIO BASED ON ASSUMED EMATT MAG  
COURSE OF 070.**

**LAY BUOY FIELD ON SHIP'S COURSE OF 250.**

**AT END OF FIELD, TURN PORT OR STBD 180  
DEGREES.**

